Helicobacter pylori eradication regimens in an antibiotic high-resistance European area: a cost-effectiveness analysis

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Abstract: INTRODUCTION: Helicobacter pylori infection (H pylori-I) affects more than half of the global population and consists an important burden to public health and healthcare expenditures, by contributing to many diseases' pathogenesis. AIM: This study aimed to evaluate the current nonbismuth quadruple eradication regimens in a high antibiotic resistance area, such as Greece, concerning their cost-effectiveness, especially during financial crisis period. MATERIALS AND METHODS: Eight hundred and nine patients who received eradication treatment against H pylori-I were included to evaluate five different regimens, using amoxicillin, clarithromycin, and metronidazole as antibiotics and one proton-pump inhibitor, based on their current eradication rates. Regimes compared 10-day concomitant use of (a) pantoprazole or (b) esomeprazole; 10-day sequential use of (c) pantoprazole or (d) esomeprazole; and 14-day hybrid using esomeprazole. Cost-effectiveness analysis ratio (CEAR) and incremental cost-effectiveness ratios were calculated taking into account all direct costs and cases who needed second-line treatment. Additionally, sensitivity analysis was performed to predict all potential combinations. RESULTS: Ten-day concomitant regimen with esomeprazole was characterized by the lowest CEAR (179.17€) followed by the same regimen using pantoprazole (183.27€). Hybrid regimen, although equivalent in eradication rates, was found to have higher CEAR (187.42€), whereas sequential regimens were not cost-effective (CEAR: 204.12€ and 216.02€ respectively). DISCUSSION: This is the first study evaluating the cost-effectiveness of H pylori-I treatment regimens in a high clarithromycin-resistance (26.5%) European area, suggesting the 10-day concomitant regimen with generics using esomeprazole 40 mg as the most appropriate one. National and regional guidelines should include cost-effectiveness in their statements, and further studies are required to clarify the necessity of a wide "test and treat" policy for H pylori-I.

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Table 2. Eradication rates, total costs to treat a hundred patients and CEARs of all five studied eradication regimens

	ER(%)	Total Cost (Euros-€)	CEAR
CON-P	90.6	16604.7	183.27
CON-E	93.4	16734.9	179.17
SEQ-P	78.1	16871.2	216.02
SEQ-E	82.8	16900.4	204.11
HYBRID	90.2	16905.0	187.42

ER; eradication rate, CEAR; cost-effectiveness analysis ratio, CON-P; 10-days concomitant eradication regimen using pantoprazole, CON-E; 10-days concomitant eradication regimen using esomeprazole, SEQ-P; 10-days sequential eradication regimen using pantoprazole, SEQ-E; 10-days sequential eradication regimen using esomeprazole, HYBRID; 14-days hybrid eradication regimen.